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Financial Development, International Migrant Remittances and Endogenous Growth in Ghana¹

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ABSTRACT

Purpose: This paper seeks to provide further insights into understanding the finance-growth nexus by verifying the hypothesis that financial development promotes economic growth through its capacity to attract increased international migrant remittances to Ghana.

Design/Methodology/Approach: A dynamic equilibrium-correction mechanism model for the period 1987(3)-2007(4) was estimated following the Johansen cointegration procedure. This approach produced maximum likelihood estimators of the unconstrained cointegrating vector, and suggested the number of cointegrating vectors without relying on an arbitrary normalization.

Findings: The findings reveal two stylized facts with reference to Ghana. First, although financial development Granger-causes international migrant remittance inflows, it is in itself directly detrimental to endogenous growth. Second, international migrant remittance inflows are statistically significant in explaining variations in endogenous growth in the short run as well as in the long run.

Practical Implications: Since directly, financial development hampers endogenous growth, but Granger-causes increased inflows of migrant remittances, and these remittances impact positively but marginally on endogenous growth, it follows that the sequencing of implementing Ghana's financial reform programmes should be re-examined, whilst an enabling environment is created to induce Ghanaians living abroad to remit home through official channels.

Originality/Value: International migrant remittances were found to be statistically significant in promoting endogenous growth, albeit marginally. Financial development does not directly engender growth, unless it succeeds in attracting non-debt foreign capital in the form of remittances through the formal sector. Financial development causes migrant remittance inflows which impact positively on growth.

Keywords: Financial Development, Economic Growth, International Migrant Remittances, Ghana

Paper Type: Research Paper

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1.0 INTRODUCTION

A well-functioning financial sector is expected to attract idle funds for financing economic growth and development projects. Generally, international migrant remittances are highly significant to low-income economies constituting about 2% of their gross domestic product (GDP) and 6.2% of their imports (World Bank, 2003). Besides, these remittances have, in recent years, surpassed foreign direct investment or official development assistance, export revenues, and foreign aid (Giuliano and Ruiz-Arranz, 2005; World Bank, 2006).

Consequently, in recent years, international migrant remittance flows to developing countries have attracted the attention of policymakers, researchers and scholars. The rising interest and enquiry into the continuous increasing remittance flows to developing countries, notwithstanding, experts have expressed divergent views on its implications for economic growth and development. On one hand, remittances are believed to be a catalyst for accelerated economic growth and development as they increase purchasing power of households and serve as an additional working capital for private enterprises of recipient households who are often resident in low-income countries. International remittance inflows are also crucial in cushioning governments of developing countries in managing fiscal deficits and budgets towards macroeconomic stability and real growth. On another hand, international remittance inflows are feared to be capable of destabilising the macroeconomy of developing countries through excess demand resulting in price hikes; weakening international competitiveness of exports due to real appreciation of exchange rate, and promoting moral hazards where labour market participation is reduced due to over-reliance on remittances by beneficiary households while government inducement for implementing sound macroeconomic policies towards stability, growth, structural reforms, and poverty reduction might be considerably truncated.

Various empirical studies have produced mixed results on the impact of remittances on economic growth. Faini (2002) found that for an economy to realize the full impact of remittances which allow households to accumulate productive assets for employment purposes, a sound policy environment that does not foster macroeconomic uncertainty is required. Meanwhile, there is a general consensus among economists that financial sector development is closely and directly associated with a stable macroeconomy. Using a sample of 31 small-open developing economies from Sub-Saharan Africa (SSA) and Latin America and Caribbean (LAC), Ahortor and Adenutsi (2009) found that, generally, remittances promote long-run growth. The impact of remittances on growth is, however, more significant in LAC than in SSA (Ahortor and Adenutsi, 2009). Conversely, Giuliano and Ruiz-Arranz (2005) found the impact of remittances on growth to be generally insignificant but positive in countries with less developed financial markets. By implication, the exact effects of financial development and international remittance inflows on economic growth are largely dependent upon the uniqueness of the particular economy under consideration. The pertinent questions that arise from these conclusions are: To what extent has the increasing inflow of international migrant remittances led to economic growth in Ghana? What is the impact of financial development on economic growth in Ghana? Has financial sector development enhanced international migrant remittance inflows to Ghana? Are there any lines of causality traceable among financial development, international migrant remittance inflows and economic growth in Ghana? Accordingly, with reference to Ghana, this paper is aimed at addressing these questions for the period, September 1987 to December 2007.

The rest of the paper is organised as follows. Section 2 provides the theoretical framework and literature review, while in Section 3 the empirical endogenous growth model which incorporates international migrant remittances and financial sector development is specified. Section 4

presents the empirical results and analyses; and the last section draws policy implications and advances some policy recommendations for attracting the inflows of international remittances as a source of economic growth and development strategy for Ghana.

2.0 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Financial Sector Development and Endogenous Economic Growth

Romer (1986, 1990) formulates an economic growth model that is endogenous in content. In neoclassical growth models, the long-run economic growth rate is exogenously determined by either assuming a savings rate or a rate of technical progress. However, endogenous growth theory seeks to overcome this shortcoming by building macroeconomic models out of microeconomic foundations so that, in the long run, an economy grows along a balanced growth-path where all the key factors exhibit constant and identical asymptotic rates of growth. Households are assumed to maximise utility subject to budget constraints while firms maximise profits. Crucial importance is usually given to the production of new technologies and human capital.

Endogenous economic growth theory demonstrates that policy measures can have an impact on the long-run growth rate of an economy. For example, subsidies on research and development or education are expected to increase the growth rate by enhancing the incentive and motivation to innovate. Endogenous growth economists contend that improvements in productivity can be linked to a faster pace of innovation and extra investment in human capital. Endogenous growth models, thus, stress the need for government and private sector institutions and markets which nurture innovation, and provide incentives for households to be motivated by increasing their marginal productivity. Essentially, technological innovation or knowledge is recognised to play a central role in the determination of endogenous economic growth. As knowledge is considered

an essential ingredient for endogenous growth, it is required that, there must be substantial investment in research and development for technological progress as well as in education and training of the populace.

Notwithstanding the above, financial systems have long been recognized to play an important role in economic growth and development across countries. This recognition dates back to Bagehot (1873), Schumpeter (1912), Goldsmith (1969), Cameron (1967), McKinnon (1973) and Shaw (1973), who demonstrated that the financial sector could be a catalyst for economic growth if it is developed to be well-functioning. The benefits accruable from a well-performing and developed financial system relate to financial resource mobilisation and efficient allocation of these resources to finance development projects and other related productive activities. For instance, through efficient financial intermediation a conducive environment is created which brings lenders and borrowers of funds together and thereby reducing the search and transaction costs associated with finance. Financial institutions can also create liquidity in the economy by converting short-term financial assets into long-term loans which then minimises information costs, provide risk management services and reduce risks involved in financial transactions. Furthermore, financial intermediaries bring the benefits of asset diversification to the economy. Financial intermediaries also mobilise savings from atomised individuals for investment thereby solving the problem of indivisibility in financial transactions. Finally, financial intermediaries encourage mobilised financial resources to be invested in the most productive ventures.

The above benefits of financial intermediation translate into economy-wide benefits which motivate financial reforms in economies where the financial system is considered undeveloped. Through these reforms, financial institutions are able to mobilise more domestic savings channelled through the formal financial sector, improve the efficiency of financial intermediation, and enhance the effectiveness of monetary policy.

Based on these potential benefits, many developing countries including Ghana have implemented financial liberalisation policy as a component of the Structural Adjustment Programme since the mid-1980s.

Through the removal of the elements of financial repression, particularly controlled interest rates, financial sector liberalisation was expected to lead to a higher and a more realistic real deposit rate. A higher real deposit rate has a substitution effect on households by attracting them to swap present consumption for savings. On the other hand, the higher interest-income earned on savings has a wealth or income effect on households by attracting savers to achieve their saving targets with lower stock of savings. The two effects operate in opposing directions and the net outcome would depend on which one of the two effects dominates the system at any particular time. The fundamental implication of the McKinnon-Shaw doctrine is that the substitution effect would outweigh the wealth effect. Financial savings will further be boosted by a shift in the savers wealth portfolio from non-financial assets to financial assets which can be referred to as asset substitution effect.

Contrary to the McKinnon-Shaw premise, the increased real interest rate may not necessarily lead to improved financial savings. In critically low-income countries, for instance, the level of income could be so abysmal that households spend virtually all their earnings on basic necessities of life². In such a case, even with high real deposit rates, very little or no proportion of income could be saved. This suggests that the McKinnon-Shaw proposition would, therefore, be more relevant to high-income countries. A recent study of this proposition by Ogaki *et al.* (1996) reveal that, in the long run, a 100% rise in real interest rate leads to a 66.7% rise in financial savings in high-income countries but savings could only increase by 10% rise in low-income countries.

² Among very low-income households, marginal propensity to consume and average propensity to consume are always one or approximately one, implying marginal propensity to save or average propensity to save is always zero or approximates zero.

Also, in an under-banked economy, where the financial markets are rudimentary, with a large size of financial intermediation taking place in the informal sector, savings may not be sensitive to real interest rates. It is common knowledge that the informal financial sector is large and disintegrated in many developing countries particularly Sub-Saharan Africa (SSA). For the savers who operate in the formal financial sector, a history of government interference in the deposit market or growing incidence of bank distress could discourage them from saving in financial instruments despite the attractive increases in real deposit rates. Besides, through financial liberalisation, innovative financial products such as consumer credit facilities could induce a rise in consumption expenditure thereby reducing private savings in an economy.

Even when financial reforms lead to increased savings, it might not necessarily promote economic growth. The use to which financial savings are put is an important determinant of growth. Economic activities would be stimulated if more of the growth in savings is channelled to productive activities. On the contrary, the gains in economic growth through increased credit to the private sector would be sidelined if the increased savings is used to finance fiscal deficits (van Wijnbergen, 1983). Also, if the increase in interest rate is excessive, the lending portfolio of banks could become riskier just as firms would face harder times in meeting interest and capital repayment commitments. Barring some of these possible negative developments, financial liberalisation would naturally improve the financial intermediation process and lead to increased investment, productivity and rapid economic growth.

Measures of financial development are used to evaluate the effectiveness of financial reforms. Some of the financial development measures mostly used empirical studies are:

- The growth of private financial assets as measured by the size of broad money (M_2 or M_3), which indicates the liquidity position of the financial system, is used to measure the

degree of monetization and overall size of financial market development. An alternative measure of this index is the ratio of M_2 or M_3 to gross domestic product (GDP).

- Stock price index or market capitalisation index in economies where stock markets exist. The higher the index, the higher the extent of financial development.
- The proportion of credit to the private sector in relation to public sector borrowing from financial institutions. As the financial sector develops, the proportion of commercial credit to the private sector to finance productive activities is expected to increase while public sector borrowings from commercial banks reduce in relative terms. This is essentially so because the tendency of crowding-out the private sector by the central government through excessive borrowing is expected to minimise overtime. Similar measures from this perspective are the share of private sector credit to total bank credit; and the ratio of private sector credit to GDP.
- Nominal interest rates, which measure that cost of lending and borrowing is an indicator of financial development. In this regard, the more developed the financial sector, the lower the cost of lending and borrowing since within a developed financial sector, the financial sector is more competitive and hence interest rates are competitively low.
- The growth of bank credit to the private sector by commercial banks relative to the growth of private sector deposits with financial institutions is a measure of financial development. A faster growth of the former relative to the latter indicates that there is pressure on domestic resources, which reflects poor performance of the financial sector in resource mobilisation and allocation and, therefore, underdevelopment of the financial sector.
- The magnitude and trend of real interest rates. As the financial sector develops, real interest rates are expected to be positive and less volatile which then reduces the risk exposure of depositors.

- Real deposit growth rate is an indication of efficient financial resource mobilisation by financial institutions. The more developed the financial sector, the higher the average growth rate of deposit mobilisation by financial institutions.
- Number and types of financial institutions are an indication of financial competitiveness and drive to efficiency in resource mobilisation and allocation. Therefore, as the financial sector develops, the concentration of formal financial institutions is expected to increase relative to the number of institutions in the curb financial market.
- The spread between deposit and lending rates shows efficiency of financial intermediation. As the financial sector develops, interest rate spread narrows because the tendencies for disequilibrium are minimised; hence the more developed the financial sector, the narrower the interest rate spread.

In analyzing the effects of financial liberalisation it is often useful to appraise the fiscal process. Fiscal stability and the success of monetary reforms are interrelated. Without fiscal balance, the resulting increased budgetary expenditure could induce authorities to accumulate higher deficits, perhaps financed through excessive borrowing, which could erode the gains from the reforms. Where the deficits are financed through market instruments, domestic interest rates could rise even in real terms while exchange rate could depreciate as a result of increased demand for cheaper foreign goods and harder currencies. These developments could shift the burden of adjustment to the real sector. Also, depending on its nature, the fiscal process could contribute to higher rate of inflation and where the expansion in credit that follows liberalisation is rapid and greater than deposit growth, this could lead to a loss of macroeconomic control, further causing and exacerbating price hikes. This process could spirally cause higher increases in interest rates and prices which might adversely affect the real sector. The fiscal stance as well as the behaviour of changes in the price level is, therefore, important in assessing the outcome of financial reforms.

2.2 Economic Growth and International Migrant Remittances

The Macroeconomic Growth Model for International Remittances: Theoretical Perspective

The traditional national income identity from the Keynesian perspective is given as:

$$Y = C + I + G + (X - M) \equiv C + I + T + (X - M) \quad (1)$$

where Y is national income; C represents consumption expenditure; I denotes investment expenditure; G stands for tax-related government expenditure; $(X - M)$ is net exports measured as exports (X) minus imports (M); and T is total tax revenue which must equate G when the fiscal policy being pursued by the government is balanced.

In a typical modern globalized low-income import-dependent developing economy like Ghana where international inward remittances are not directly taxed, a national income model can be modified to include net international migrant remittances (R) since R is an additional source of income and because it is well-known that $R > 0$ so that, generally, for a labour-exporting country:

$$Y = C + I + T + (X + R - M) \quad (2)$$

$$Y = C_d + C_r + I_d + I_r + T + (X + R - M_d - M_r) \quad (3)$$

where subscripts $_d$ and $_r$ denote domestic-related and remittance-related respectively.

$$S = I + (X - M) \quad (4)$$

where S stands for total savings decomposable into S_d and S_r . Equation 4 is conceivable

because it is generally known that:

$$S = Y - T - C = I + (X - M) \quad (5)$$

Thus, from (1) to (5), it can be specified that:

$$S \equiv (S_d + S_r) = I + (X + R - M_d - M_r) \quad (6)$$

where subscripts $_d$ and $_r$ denote domestic-related and remittance-related respectively.

$$-KI = (X + R - M_d - M_r) \quad (7)$$

where KI is the net capital inflows.

Clearly, inward international remittances are an essential component of capital inflows, which like export earnings, are a positive determinant of economic growth in a net labour-exporting country. Therefore, international remittance inflows, like all other external capital inflows, act invariably as an important source of finance to all countries and as such are reported in the balance of payments accounts. However, as expected, just as other capital inflows such as foreign aid (AID), foreign direct investment (FDI) and official development assistance (ODA), the macroeconomic impact of international remittances on growth in developing countries has been generally inconclusive. This, notwithstanding, there is a general consensus among development economists that the development of the financial sector is a necessary condition for attracting increased external private capital of all kinds, which should propel economic growth in developing countries where the financial sector is less developed.

One school of thought led by Stahl and Arnold (1986), Massey *et al.* (1998), and de Haas (2003) believes that migrant remittances often contribute positively to the removal of production and investment constraints, raising real income levels, and minimising balance of payments problems of developing countries. Besides, remittance inflows help to narrow the trade gap, control external debt, facilitate debt servicing, and supply foreign exchange with migrants sometimes using their earnings to finance development projects in their native countries. Another school of thought pioneered by Lipton (1980), Taylor (1984), and Rubenstein (1992) maintains that international migration drains developing countries of highly trained and skilled labour and capital by crowding-out domestic production of tradable goods in the brain-drained

underdeveloped economy (Stark and Levhari, 1982; Ahlburg, 1991). Thus, migrant remittances, apart from deepening foreign-dependency mentality of developing countries, they can cause higher inequality among households and macroeconomic instability in the form of inflation through excess demand for consumables relative deficit in domestic production capacity of developing countries.

2.3 Review of Empirical Literature

2.3.1 Financial Development and Economic Growth

A considerable body of literature has emphasized the vital role of the financial sector in facilitating economic growth and development. While there is no absolute consensus on the McKinnon-Shaw hypothesis that the removal of financial repression, usually characterized by control of interest rates, imposition of credit ceilings, and credit rationing, culminates in significant enhancement for long-run growth prospects, the dominant conclusion from various empirical works is that financial development usually impacts positively on economic growth. For instance, the findings from the empirical works of Ndebbio (2004), Khan and Senhadji (2000), Levine (1997), Bencivenga, Smith and Starr, (1995), Obstfeld (1994), and King and Levine (1993) generally suggest that through a number of mechanisms, financial development impact positively on economic growth. Furthermore, Adenutsi (2002) concludes that though financial development does not directly promote economic performance, it does enhance savings mobilisation by commercial banks which in turn stimulates growth in Ghana. The results from some empirical studies, including the works of Agarwala (1983), Khatkhate (1988), Levine and Zervos (1998), Taylor (1983) and van Wijnbergen (1983), however, failed to show any significant impact of financial development on growth thereby failing to provide justification for the McKinnon-Shaw hypothesis.

2.3.2 International Migrant Remittances and Economic Growth

Empirical evidences suggest that international migrant remittance inflows promote economic growth through positive impact on consumption, savings and investment. Lucas (2005) found that remittances impact positively on investment in India, Morocco and Pakistan. The results from a study conducted by Leon-Ledesma and Piracha (2004) for 11 transition economies of Eastern Europe for the period 1990-1999 affirm the view that remittances have a positive impact on productivity and employment, both directly and indirectly, through investment. Similarly, Glytsos (2002) examined the direct and indirect implications of international migrant remittances for investment in the Mediterranean and found that in six out of the seven countries sampled, remittances promote investment. Faini (2002), Solimano (2003), Mundaca (2005), Adams and Page (2005), Toxopeus and Lensink (2006), and Ahortor and Adenutsi (2009) also found significant positive impact of remittances on economic growth.

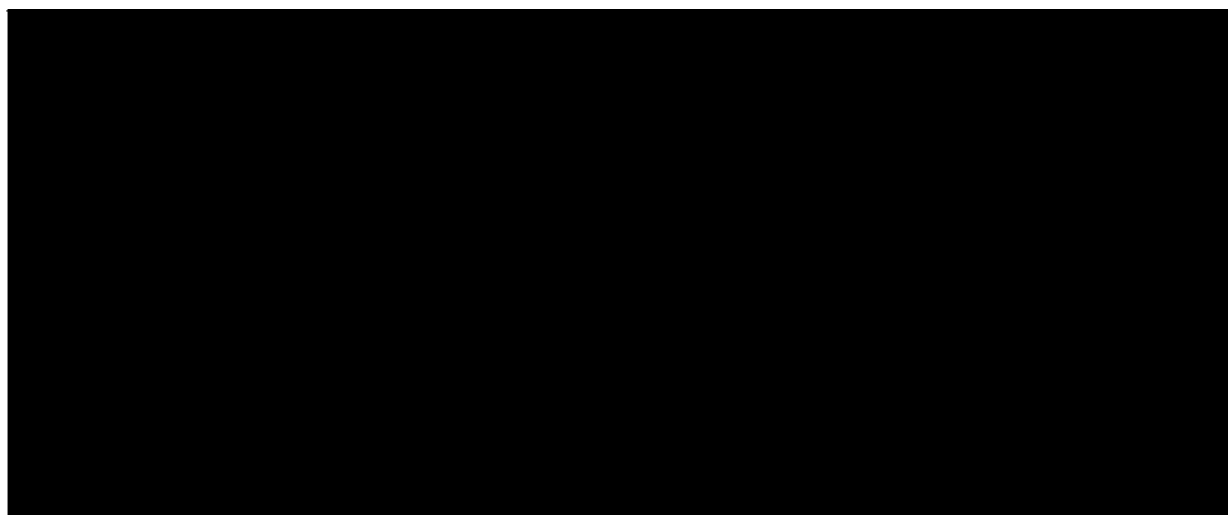
On the contrary, Chami *et al.* (2005), Giuliano and Ruiz-Arranz (2005), and IMF (2005) found that whereas remittances relationship with *per capita* GDP is not statistically significant, remittances do have a robust positive impact on financial development in countries with shallower financial markets. Besides, remittances and financial development are strongly correlated positively. The threshold analyses also suggest that remittances seem to substitute for a well-developed financial system by promoting growth more robustly in countries with weak financial systems. In a related study, Jongwanich (2007) observed that although remittances significantly promote poverty reduction, their effect on economic growth in developing Asian-Pacific countries has been marginal. Chimhowu *et al.* (2004) found that in low-income countries, increased remittance inflows have led to distortions in the functioning of formal capital markets and also destabilizing exchange rate systems through the creation of parallel currency markets. Acosta *et al.* (2007) concluded that remittance inflows result in reduction of

resources as well as resource redistribution-away from productive sectors of an economy through rising prices in the non-tradable sectors, which impliedly, suggests that remittances impact negatively on economic growth.

2.4 Trends in International Remittance Inflows and Financial Development in Ghana

2.4.1 Trends in International Migrant Remittance Flows to Ghana

With the implementation of the financial sector reforms programmes in September 1987, the inflow of international migrant remittances to Ghana has been on the rise. The trend in the inflows of international migrant remittances to Ghana since the implementation of the financial sector reform programme is depicted in Figure I below.



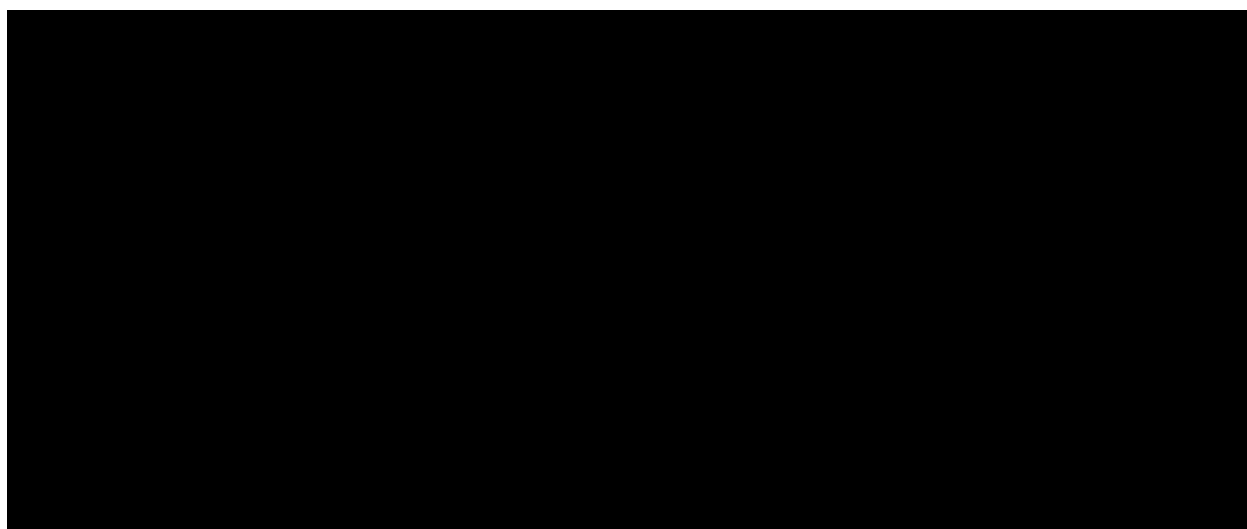
Source: *Author's estimation*

During the first-five years of implementing the financial reforms programme (i.e. between 1987 and 1992), the inflows of international migrant remittances were very low and by far stagnant in growth. From 1993, however, there has been a significant rise in international remittance inflows to the Ghanaian economy. Between the year 2002 and 2007, for instance, international migrant remittances to Ghana increased by more than 400%. This is a testimony that the rise in the inflows of international migrant remittances to Ghana has been consistently significant since

the year 2002. Probably, as economies have become more integrated as a result of increasing pursuit of globalisation policies in the new millennium, it has probably become cheaper and less cumbersome for migrants to remit home through officially approved channels.

2.4.2 Trends in International Migrant Remittance Inflows and Financial Development in Ghana

Figure II below depicts the trends in international migrant remittance inflows (REM), and financial development proxied by financial deepening (FND) and financial widening (FNW)³.



Source: Author's estimation

Note: Remittances values are the total received in each year.

According to Figure II, the implementation of financial reform programmes in 1987 has hardly had any significant positive impact on financial deepening and financial widening. For instance, during the first decade of the implementation of the financial sector reforms, (i.e. between 1987 and 1996), financial widening oscillated around 90%⁴, but this fell below 60% hovered around 50% between 1996 and 2002. Since the year 2000, however, there has been a gentle upward

³ In this study, FND was measured as broad money (M2) as a ratio of nominal GDP, whilst FNW was measured as the share of private sector credit by commercial banks as a proportion of total commercial bank credit.

⁴ During this era, bank deposit mobilisation was low and the main depositors were cocoa farmers as state institutions were running at a loss and government concentrated on deficit finance and external borrowings since commercial banks could not mobilise enough deposit to extend credit to government and public institutions. Accordingly, credit extension was low and mainly went cocoa farmers who received their monies through banks.

trend in financial widening from 40% to over 80% in 2007. Similarly, the trend in financial deepening has not shown that the implementation of financial liberalisation programme has had any robust impact on the Ghanaian economy in terms of financial development. From the time the financial reforms programme was launched in 1987 to the year 2002, there has been a stagnant or sluggish growth in financial deepening which has hardly exceeded 20%. It was only after the year 2002 that there appear to be a consistent gradual growth in financial deepening exceeding 20% which has approached 40% in the year 2007. Quite clearly, there is no clear-cut correlation between international migrant remittance inflows and financial sector development as depicted in Figure II above.

3.0 METHODOLOGICAL APPROACH AND EMPIRICAL MODEL

3.1 Methodological Approach

3.1.1 Stationarity Test

The time series properties of the variables were explored to determine the order of integration of each variable included in the empirical model. The essence of this test is to avoid spurious regression problems normally associated with time series econometric modelling (Granger and Newbold, 1974). In this paper, the Phillips and Perron (1988) stationarity test and the popular Augmented Dickey Fuller test were used to examine the stationarity status of the variables. In the event of conflict in the results, the Phillips-Perron test was relied upon rather than the Augmented Dickey Fuller test because according to Harris (1995), the former is capable of taking account of any possible structural break in a given time series data.

3.1.2 Cointegration Test

In order to determine the number of equilibrium-correction terms that should appear in the Dynamic Equilibrium-Correction Mechanism model, the Johansen Cointegration test procedure

was followed. This approach produced maximum likelihood estimators of the unconstrained cointegrating vector, and also helped to empirically determine the number of cointegrating vectors without relying on an arbitrary normalization.

3.1.3 Data Transformation Procedure

The study followed the non-linear growth approach suggested by Gaynor and Kirkpatrick (1994) in transforming annual data such as GDP, gross fixed capital formation, remittances, and FDI into quarterly series. With this approach, a second degree of polynomial function is specified to capture one turn, up or down, in the series while for more than one turn in the series, a higher degree polynomial was specified accordingly.

3.1.4 Estimation Procedure

A single equation multivariate Ordinary Least Squares (OLS) estimation procedure was adopted to evaluate the unrestricted models specified. The justification for the inclusion of the control variables in the final estimated models was guided by the general-to-specific parsimonious approach. The Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SIC) were used to guide the selection of the final model, in conformity with the fundamental assumptions underlying of OLS. Based on the final cointegrating model selected, the relevant equilibrium-correction mechanism model was estimated to determine the short-run dynamics of the specified model.

3.2 The Empirical Endogenous Growth Model and Data Issues

To determine the responsiveness of economic growth (lnGDP) to changes in international migrant remittances (REM) and financial sector development (FSD), the orthodox sources of endogenous growth notably investment (INV), human capital development (HCD), economic

openness (OPN), and foreign capital inflows were considered in accordance with the empirics of Lucas (1988), Barro (1990), Adenutsi (2002) and Ahortor and Adenutsi (2010). Additionally, REM was included to capture the impact of remittances on endogenous growth in a typical small-open import-dependent economy as espoused under the theoretical framework. In this context, the empirical long-run endogenous economic growth model for Ghana is specified as:

$$\ln GDP_t = \varpi_0 + \varpi_1 \ln GDP_{t-1} + \varpi_2 HCD_t + \varpi_3 INV_t + \varpi_4 REM_t + \varpi_5 f\ddot{s}d_t + \varpi_6 \aleph_t + \mu_t \quad (8)$$

where $\ln GDP$ is the economic growth measured as the natural logarithm of real GDP, $\ln GDP_{t-1}$ represents the initial real growth rate, HCD is the human capital development index, and $f\ddot{s}d$ denotes a vector of indicators of financial sector development comprising financial deepening and financial widening one of which was used based on the result obtained from the Granger causality test. The subscript t denotes the specific time period, \aleph is a set of controlled variables, and μ is the stochastic term. Following Giuliano and Ruiz-Arranz (2005), Adenutsi (2002), Barro (1990), and Barro and Sala-i-Martin (1992), \aleph includes government expenditure (GEX), foreign capital inflows other than remittances, economic openness (OPN), exchange rate and inflation (INF).

Foreign capital inflows in the form of AID, ODA and FDI were initially included because the impact of foreign capital inflows to developing countries on economic growth has remained ambiguous. For instance, proponents such as Chenery and Strout (1966), Papenek (1973), Levy (1987), Islam (1992), Fayissa and El-Kaissy (1999) argue that foreign capital inflows are essential for growth in developing countries. However, Heller (1975), and Boone (1994) contend that foreign capital inflows have negative effects on domestic savings and economic growth in developing countries. Consequently, we cannot, *a priori*, predict the signs of the coefficients of AID, ODA and FDI. The inclusion of $f\ddot{s}d$ in the model is justified by the works of Cameron (1967), Goldsmith (1969), McKinnon (1973), Shaw, (1973), Gibson and Tsakalotos

(1994), Adenutsi (2002), and Ndebbio (2004), which demonstrated that the financial sector could be a catalyst of economic growth, at least indirectly, if it is developed to be well-performing and integrated to mobilise critical financial resources. The study used quarterly time series data from 1987(3) to 2007(4) obtained from secondary sources such as Bank of Ghana, Ministry of Education, Ghana Statistical Service, International Monetary Fund, and the World Bank⁵.

4.0 EMPIRICAL RESULTS AND ANALYSES

4.1 Results of Unit Roots Test

The unit roots test results are presented in Table 1.

Table 1: Results of Unit Root Tests (<i>constant, time trend included</i>)			
Variables	Augmented Dickey Fuller (ADF) Test Stat	Phillips-Perron (PP) Test Stat	Order of Integration
	ADF Average Critical Value(5%): 3.472	PP Average Critical Value(5%): 3.470	
lnGDP	8.358461	8.355329	I(1)
REM	6.179421	4.797700	I(1)
FSD	3.971380	11.36598	I(1)
INV	15.79615	12.35717	I(1)**
HCD	8.746625	8.746561	I(1)
FDI	8.778351	8.816598	I(1)
GEX	4.385911	6.437002	I(1)
INF	6.626253	5.071074	I(1)
OPN	4.439119	16.22168	I(1)*

The H_0 is that a series is non-stationary against an alternative hypothesis (H_1) of a series being stationary. The rejection of the H_0 for both ADF and PP tests is based on the MacKinnon critical values. The lag lengths were automatically determined in accordance with SIC. *Indicates variable is I(0) under PP test but I(1) under ADF test while ** indicates variable is I(2) under ADF but I(1) under PP test. All variables were, however, considered to be of order one following confirmation from the graphical representation of the probability distribution functions.

Source: Author's estimations

Generally, all the variables became stationary after first-differencing, thus, each variable included in the empirical models is integrated of order one. This result provides a necessary, but

⁵ Refer to Appendix A for details on specific sources of data and description of these data. 1987(3) was chosen as start date for the analysis because financial sector reforms were initiated in September 1987 whilst the end period, 2007(4), is based strictly on availability of data.

insufficient condition for estimating cointegrating and equilibrium-correction models as specified in empirical model (equation 8) above.

4.2 Results of Cointegration Test

For the sufficient rationale for estimating equilibrium-correction and cointegrating empirical models, the Johansen and Juselius (1990) Maximum Likelihood (JML) test procedure was adopted to determine the cointegrating rank of the system of each empirical model and the number of common stochastic trends driving the entire system. The results of the JML test are summarized in Appendix B. The cointegration modelling was undertaken within the context of an unrestricted vector equilibrium-correction model that allows for a constant term. The motivation behind the adoption of this assumption was based partly on the results of the unit root and the essence to ensure that the ultimate solution does not fall into equations of higher degree polynomial terms. The maximal eigenvalue test, which was relied upon, suggested the presence of at most one cointegrating.

4.3 Results of Granger-Causality Test

The results of Granger-causality test are presented in Table 2 below. These results indicate that over the initial 10-quarter lag span, there are no traces of causality between financial widening (FNW) and international migrant remittance inflows (REM), and between financial widening (FNW) and real economic growth (g_r). In other words, financial widening does not cause international remittances inflows neither does it cause real economic growth in Ghana and vice versa. There is, however, a bi-directional causality between financial deepening and remittances, and between financial deepening and economic growth. One interesting result from the Granger-causality test is that remittances are a significant cause of growth in Ghana, but of growth does not cause migrant remittance inflows.

Table 2: Results of Granger Causality Test											
<i>Variables</i>		<i>Number of Lags (reported probability values)</i>									
<i>from</i>	<i>to</i>	1	2	3	4	5	6	7	8	9	10
FND	REM	0.000	0.000	0.007	0.002	0.044	0.087	0.030	0.030	0.109	0.196
REM	FND	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FNW	REM	0.627	0.447	0.677	0.107	0.462	0.497	0.413	0.127	0.604	0.526
REM	FNW	0.923	0.720	0.857	0.929	0.959	0.988	0.978	0.995	0.989	0.998
g_r	REM	0.737	0.922	0.980	0.989	0.610	0.815	0.870	0.847	0.165	0.165
REM	g_r	0.052	0.014	0.033	0.012	0.006	0.007	0.012	0.009	0.005	0.005
FNW	FND	0.612	0.217	0.178	0.238	0.562	0.453	0.492	0.618	0.792	0.376
FND	FNW	0.724	0.840	0.238	0.297	0.420	0.638	0.749	0.010	0.015	0.019
g_r	FND	0.023	0.047	0.113	0.010	0.005	0.008	0.026	0.038	0.018	0.045
FND	g_r	0.044	0.001	0.014	0.015	0.009	0.010	0.021	0.022	0.036	0.039
g_r	FNW	0.831	0.847	0.707	0.453	0.530	0.647	0.754	0.788	0.847	0.859
FNW	g_r	0.529	0.378	0.304	0.436	0.588	0.692	0.628	0.686	0.866	0.891

Source: Author's estimations

4.4 Results of Estimated Cointegrating Model

The results emanating from the estimated empirical cointegrating model are presented in Table 3 below. The estimates show that financial development does not directly promote long-run economic growth in Ghana. In fact, financial development is the leading macroeconomic factor inhibiting long-run economic growth in Ghana. Other principal factors responsible for long-run growth in Ghana are initial real growth, investment, economic openness, and human capital development. Whereas investment and openness have positive long-run impacts on economic growth; inflation and human capital development negatively influence long-run endogenous growth in Ghana. Government expenditure and FDI are not statistically significant in explaining long-run economic growth in Ghana. Significantly, 100% rise in initial growth rate, investment, and economic openness increases endogenous economic growth by 82%, 73% and 67% respectively, but a similar rise in international migrant remittance inflows to Ghana accounts for only 1.8% growth in the long run.

Table 3: Results of Estimated Cointegrating Model

$\ln GDP_t = 1.2832 + 0.8193 \ln GDP_{t-1} + 0.0176 REM_t + 1.1551 GEX_t + 0.7313 INV_t$				
(6.2806)**	(3.7890)**	(5.2600)**	(1.5122)	(2.6624)**
$-0.1942 HCD_t - 1.7321 FSD_t - 0.0515 FDI_t - 0.0132 INF_t + 0.6697 OPN_t$				
(-4.4001)**	(-3.3563)**	(-1.2391)	(-2.2216)*	(3.1978)**
Adjusted R ² = 0.9158			F-Statistic = 61.2989 [0.0000]**	
White Heteroskedasticity = 1.4346 [0.1565]			Ramsey RESET = 0.4104 [0.6567]	
Serial Correlation LM Test = 1.2338 [0.2702]				

*significant at 5%; ** significant at 1%; t-statistics are in (); F-probabilities are in []

A striking revelation from the long-run empirical results is that improvement in financial development as measured by financial deepening; increases in human capital development, and inflation impact negatively on long-run endogenous growth. Specifically, with 100% improvement in financial development, increases in human capital development and inflation inhibited the rate of long-run endogenous growth by 173%, 19%, and 1.3% respectively. The finding that financial development undermines long-run growth justifies the apprehension of the Neostructuralists, notably Taylor (1983), van Wijnbergen (1983), Buffie (1984) and Kohsaka (1984) that in developing countries where the informal financial market plays a crucial role in resource mobilisation and allocation, the pursuit of financial liberalisation policy could be detrimental. And as revealed in Figure II, Ghana's formal financial market is still narrow and shallow, and hence incapable of maximising the benefits associated with financial development. Altogether, about 91% of total variations in long-run endogenous economic growth are explained by the explanatory variables.

4.5 Results of Estimated Equilibrium-Correction Mechanism Model

From the estimated results presented in Table 4 below, the main positive macroeconomic factors that explain short-run variations in endogenous growth in Ghana, in order of statistical importance, are investment, initial rate of economic growth, government expenditure, international migrant remittance inflows, human capital development, and the rate of inflation. In the short run, financial development and economic openness are the principal factors undermining endogenous economic growth, whilst FDI does not influence short-run growth in Ghana. Over 96% of the total short-run variations in endogenous growth are attributable to the explanatory variables aforementioned. From the short-run dynamics, any disequilibrium in endogenous growth is corrected in the next quarter at the rate of 6.7%.

The empirical results suggest that, within the short run, a one percentage further development of the financial sector at any point in time directly results in reducing the endogenous growth rate by about one percent. Although the level of financial development in the previous two quarters (FSD_{t-2}) positively impact on endogenous growth by 62%; by the third quarter, this impact turns negative as a 100% rise in FSD_{t-3} results in the decline in the rate of endogenous economic growth by about 39% in the short run. In effect, the total impact of financial development on growth in the short run is negative, and accounting for about 81% decrease in economic growth for a 100% improvement in financial development. The short-run impact of a 100% rise in international migrant remittance inflows on endogenous economic growth is positive but merely 3.7%. This finding validates the works of Faini (2002), Mundaca (2005), Adams and Page (2005), Toxopeus and Lensink (2006) and Jongwanich (2007), but at the same time contradict that of Acosta *et al.* (2007).

In Table 4 below, the empirical results of the Equilibrium-Correction Mechanism Model are summarized.

Table 4: Results of Estimated Equilibrium-Correction Mechanism Model

$\Delta \ln GDP_t = 0.1002 + 0.3153\Delta \ln GDP_{t-1} + 0.2152\Delta \ln GDP_{t-3} + 0.1924\Delta \ln GDP_{t-4} + 0.0141\Delta REM_t$				
(3.5983)**	(5.4483)**	(4.2725)**	(3.5110)**	(4.8583)**
+0.0233 ΔREM_{t-1} - 0.7009 ΔGEX_{t-2} + 0.7465 ΔGEX_{t-3} + 2.011 ΔINV_{t-2} + 3.2887 ΔINV_{t-3}				
(5.2349)**	(-2.1059)*	(2.0220)*	(2.2014)*	(3.3221)**
+0.0163 ΔHCD_t - 1.0398 ΔFSD_t + 0.6213 ΔFSD_{t-2} - 0.3914 ΔFSD_{t-3} + 0.0035 ΔINF_t				
(2.4731)*	(-6.3278)**	(3.1413)**	(-2.4567)*	(6.6662)**
-0.0883 ΔOPN_{t-1} - 0.0672 ECT_{t-1}				
(-2.5338)*	(-2.2855)*			
		Adjusted R ² = 0.9577		F-Statistic = 61.3000 [0.0000]**
White Heteroskedasticity = 1.4346 [0.1566]				Ramsey RESET = 0.4102 [0.6655]
Serial Correlation LM Test = 1.2408 [0.2703]				

*significant at 5%; **significant at 1%; t-statistics are in (); F-probabilities are in []; ECT is the equilibrium-correction term; Δ is the first-difference operator.

5.0 POLICY IMPLICATIONS AND PRESCRIPTIONS

This paper examined the implications of financial sector development for international migrant remittance inflows and endogenous growth in Ghana since the inception of the financial sector reforms programme in September 1987. The study period was, thus, restricted to 1987(3) to 2007(4) due to data inadequacy and relevance. The results suggest that although financial development is directly detrimental to endogenous growth, it is crucial for mobilising remittances from international migrants. The results also reveal a bi-directional causality existing between financial deepening and international migrant remittance inflows, whereas a uni-directional line of causality is traceable from remittances to endogenous growth. This implies that, financial development per se is detrimental to growth in a low-income developing

country like Ghana, unless it succeeds in attracting non-debt foreign capital in the form of migrant remittances.

Based on the results obtained, this paper concludes that, within the context of the Ghanaian economy, generally: (i) financial development is crucial in determining how much remittances can be mobilised from migrants abroad; (ii) financial development can only stimulate growth indirectly if it, first of all, succeeds in attracting the inflows of non-debt external capital such as international migrant remittances through the formal financial sector; (iii) international migrant remittances positively impact on endogenous growth, in the short run as well as the long run, notwithstanding the fact that there are more important traditional macroeconomic determinants of long-run growth; and (iv) investment, economic openness and human capital development still remain important determinants of long-run economic growth.

From a policy standpoint, the estimates have informed the following implications:

- If Ghana is to benefit extensively from the positive impact of international migrant remittances on endogenous growth, then it is imperative to implement more attractive policies that would entice Ghanaians living abroad to remit more funds home to support the development agenda of the country. Policies to consider in this regard should focus on reduction in the cost of international money transfers, and enhancing the efficiency and reliability of international money transfer mechanisms. Besides, the pursuit of interest rate liberalisation policy that will lead to ensuring more attractive real interest rates via the encouragement of competition rather than direct interference in the financial market could play a pivotal role in attracting saved remittances from Ghanaians living abroad.

- International migrant remittance inflows are important to the growth prospects of the Ghanaian economy in so far as they cause financial development and, at the same time, positively impact on endogenous economic growth. Higher financial deepening is an indicator of improved public confidence in the financial system which has the potential of contributing significantly to rapid economic growth and development via the attraction of more resources including remittances from both home and abroad. However, the fact that the development of the financial sector has been very sluggish suggests that even though financial sector reforms were initiated over two decades ago, a very large proportion of money supply is still being held as currency in circulation outside banks. In this connection, policies must be directed at increasing the patronage of formal channels of remitting home. Increased inflow of remittances through the formal sector is expected to enhance financial depth and offer the government some leverage over the productive utilisation of funds. Policies aimed at encouraging the expansion of banking networks beyond national borders, banks offering a wide range of products, including among others, interest-paying foreign currency accounts and investment in special bonds must be vigorously pursued.
- There is the need for policy re-orientation towards widening financing markets so that the Ghanaian economy can maximise the full benefits associated with the pursuit of financial development programmes. Currently, even though the Ghanaian financial market is witnessing some improvements in terms of depth, the market is still narrow, to the extent that, financial widening does not Granger-cause economic growth or remittance inflows; neither does it impact on either of them. This is very likely to be the reason why financial development does not directly impact on economic growth in Ghana. This finding should not be too surprising for a developing economy in SSA where the informal sector is very large but disorganised. Accordingly, it should be

prudent for Ghana to pursue policies such as licensing, restructuring and monitoring by Central Bank aimed at integrating the informal financial sector into the formal sector.

- Contrary to the popular opinion that increased foreign capital inflows such as AID, ODA, and FDI are required to propel economic growth in developing countries, the findings of this paper suggest that foreign capital, with the exception of remittances is not a key determinant of endogenous economic growth in Ghana. Even in the case of migrant remittances, the impact is marginal on growth. This implies although there is the need to re-orient macroeconomic policies towards harnessing increased inflows of international remittances, there is also the need to create the enabling environment to mobilise domestic resources to finance pro-growth and development projects in Ghana.

The empirics of this paper are consistent with the findings from previous studies by Faini (2002), Solimano (2003), Adams and Page (2005), Mundaca (2005), Toxopeus and Lensink (2006), and Ahoritor and Adenutsi (2009) which reveal that remittances are an important determinant of economic growth. However, this same finding contradicts the finding of Acosta *et al.* (2007). Again, the finding of the role of financial development in enhancing growth is consistent with the empirical findings of Adenutsi (2002) that, directly, financial liberalisation is detrimental to economic performance, but through a number of mechanisms, like efficient resource mobilisation to propel economic performance, financial development is essential to the growth prospects of Ghana. Therefore, since financial development stimulates higher inflows of migrant remittances, and these remittances impact positively on endogenous growth, it is recommended that the sequencing of implementing Ghana's financial reforms programmes should be re-examined. In addition, the pursuit of sound fiscal and monetary policies is crucially

required to maximise the full benefits of the ever-increasing international migrant remittance inflows to propel rapid growth and sustainable development of the Ghanaian economy.

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Appendix A: Data Description and Sources

Variable	Notation	Description and Sources
Economic Growth	lnGDP	Computed as natural logarithm in real GDP. Nominal GDP obtained from Ghana Statistical Service (GSS) was deflated by consumer price index.
Economic Openness	OPN	Computed as the sum of exports and imports as a ratio of GDP which is the traditional and the most widely used index for economic openness. Data on exports and imports were obtained from GSS.
Financial Deepening	FND	The ratio of broad money (M_2) to nominal GDP was used as a measure of financial sector development. Computed by author based on M_2 data obtained from <i>Quarterly Statistical Bulletin</i> published by the Bank of Ghana (BoG).
Financial Widening	FNW	The measure of financial sector development computed as the share of commercial banks credit to the private sector as a proportion of total commercial bank credit. Computed based on the data obtained from the BoG.
Foreign Direct Investment	FDI	Net flows of investment from foreign countries to acquire a lasting management interest accounting for at least 10 percent of voting stock as reported by the World Bank in its <i>World Development Indicators</i> (WDI).
Government Expenditure	GEX	Central government spending as a share of nominal GDP used as a proxy for government size. This was computed based on the reported data obtained from BoG.
Human Capital Development	HCD	Growth in secondary, commercial, technical and vocational schools enrolment as a deflated by population growth rate. Source of post-basic school enrolment was the Ministry of Education while population growth rate was computed from data obtained from <i>World Development Indicators</i> published by the World Bank
Inflation Rate	INF	Computed as annualised growth rate in consumer price index as reported by BoG in <i>Quarterly Statistical Bulletin</i> .
International Migrant Remittances	REM	Workers’ remittances plus compensation of employees received from abroad by residents in Ghana as a share of GDP. Source: IMF’s <i>Balance of Payments Statistics</i> and World Bank’s <i>WDI</i> .
Investment	INV	The share of investment proxied by gross fixed capital formation to nominal GDP calculated based on data obtained from World Bank’s <i>WDI</i> .

Source: Author’s compilation

Appendix B: Results of Johansen Maximum Likelihood Cointegration Test

Trend assumption: Linear deterministic trend				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.809739	328.0722	197.3709	0.0000
At most 1 *	0.626706	203.6202	169.5297	0.0011
At most 2	0.426696	128.7160	132.8154	0.0535
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.809739	94.14520	62.43354	0.0000
At most 1	0.626706	53.30423	56.66261	0.0612
At most 2	0.426696	41.72543	46.23142	0.1406
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's estimation